

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A steel for a high-strength race comprising the following elements, in percentage by weight:

C: 0.3 to 0.6%;

Si: 0.3 to 1.3%;

Mn: 0.5 to 1.5%;

B: 0.005% or less;

Cr: 0.1 to 0.5%;

Mo: 0.1 to 0.5%;

Ni: 0.02 to 1.0%;

balance being Fe and unavoidable impurities,

wherein the total amount of Si and Mo is in a range from 0.5 to 1.4% and the steel is treated by warm-forging **performed under a heating condition between 720 °C and 790 °C, and normalizing performed by keeping the steel at 850 ± 10 °C, cooling at a rate of 3 to 10 °C/min. after normalizing, keeping the steel at 550 °C for 20 minutes or more and cooling to ambient temperature in air** so that a surface hardness thereof is in a range from 91 to 96 HRB.

2. (Original) A steel for a high-strength race according to claim 1, wherein the steel further comprising, as the balanced part excluding Fe, one or more elements selected from the group consisting of the following elements in percentage by weight: Bi: 0.05% or less, S: 0.10% or less, Ca: 0.01% or less, Zr: 0.10% or less, Sb: 0.10% or less and Pb: 0.01% or less.

3. (Withdrawn – Currently Amended) A high-strength race comprising;

a steel obtained by hardening the steel according to claim 1 to have a ~~a steel according to claim 1, wherein the surface has a~~ hardness of 52 HRC or more.

4. (Withdrawn – Currently Amended) A high-strength race comprising;

a steel obtained by induction hardening and tempering the steel according to claim 1 to have a ~~a steel according to claim 1, wherein the surface is hardened to have a~~ hardness of 52 HRC or more ~~by induction hardening and tempering.~~

5. (Withdrawn) A high-strength race according to claim 4, wherein the hardened surface contains a uniform martensite structure having a martensite ratio of 90% or more.

6. (Withdrawn – Currently Amended) A method for producing a high-strength race comprising:

~~heating the steel according to claim 1 to 720 to 790 °C to carry out warm forging;~~

~~keeping the steel at 850 ± 10 °C to carry out normalizing, thereafter cooling the steel at a rate of 3 to 10 °C/min, keeping the steel at 550 °C for 20 minutes or more and allowing the steel to cool in the air;~~

fabricating the steel of claim 1 into a predetermined form by machining;

performing induction hardening and tempering for the steel; and further

finishing the steel into a final product form.

7. (Withdrawn) A method for producing a high-strength race according to claim 6, wherein the surface hardness after the induction hardening is performed is 58 HRC or more and the surface hardness after the tempering is performed is 52 HRC or more.

8. (Withdrawn) A high-strength race according to claim 3, wherein the hardness of 52 HRC or more is obtained by quenching and tempering.

9. (Withdrawn) A high-strength race according to claim 3, wherein the steel further comprises, as the balanced part excluding Fe, one or more elements selected from the group consisting of the following elements in percentage by weight: Bi: 0.05% or less, S: 0.10% or less, Ca: 0.01% or less, Zr: 0.10% or less, Sb: 0.10% or less and Pb: 0.01% or less.

10. (Withdrawn) A high-strength race according to claim 3, wherein the hardened surface is formed to contain a uniform martensite structure having a martensite ratio of 90% or more.

11 - 19 (Cancelled)

20. (Previously Presented) The steel according to claim 1, consisting essentially of a uniform ferrite-pearlite.

21. (Previously Presented) The steel according to claim 1, being hardened to have a surface hardness of 58 HRC or more by induction heating and quenching.

22. (Previously Presented) The steel according to claim 21, being treated with tempering to have a surface hardness of 52 HRC or more.

23. (Previously Presented) The steel according to claim 1, further comprising a hardened surface comprising martensite in a ratio of 90 % or more.

24. (Previously Presented) The steel according to claim 22, wherein the tempering is performed by keeping the steel at 300 °C.

25. (Previously Presented) A method for producing a steel for a high-strength race, including:

producing a steel comprising the following elements, in percentage by weight:

C: 0.3 to 0.6%;

Si: 0.3 to 1.3%;

Mn: 0.5 to 1.5%;

B: 0.005% or less;

Cr: 0.1 to 0.5%;

Mo: 0.1 to 0.5%;

Ni: 0.02 to 1.0%;

balance being Fe and unavoidable impurities,

wherein the total amount of Si and Mo is in a range from 0.5 to 1.4%; and

treating the steel by warm-forging and normalizing to obtain a surface hardness of the steel in the range from 91 to 96 HRB.

26. (Previously Presented) A method for producing a steel for a high-strength race, including:

producing a steel comprising the following elements, in percentage by weight:

C: 0.3 to 0.6%;

Si: 0.3 to 1.3%;

Mn: 0.5 to 1.5%;

B: 0.005% or less;

Cr: 0.1 to 0.5%;

Mo: 0.1 to 0.5%;

Ni: 0.02 to 1.0%;

balance being Fe and unavoidable impurities,

wherein the total amount of Si and Mo is in a range from 0.5 to 1.4%; and
treating the steel by warm-forging under a heating condition between 720 °C and 790 °C and normalizing to obtain a surface hardness of the steel in the range from 91 to 96 HRB.

27. (Previously Presented) The method according to claim 26, wherein normalizing is performed by keeping the steel at 850 ± 10 °C.

28. (New) A steel for a high-strength race comprising:

a Fe based steel, comprising the following elements, in percentage by weight:

C: 0.3 to 0.6%;

Si: 0.3 to 1.3%;

Mn: 0.5 to 1.5%;

B: 0.005% or less;

Cr: 0.1 to 0.5%;

Mo: 0.1 to 0.5%;

Ni: 0.02 to 1.0%;

wherein the total amount of Si and Mo is in a range from 0.5 to 1.4% and the steel is treated by warm-forging performed under a heating condition between 720 °C and 790 °C, normalizing performed by keeping the steel at 850 ± 10 °C, cooling at a rate of 3 to 10 °C/min. after normalizing, keeping the steel at 550 °C for 20 minutes or more and cooling to ambient temperature in air so that a surface hardness thereof is in a range from 91 to 96 HRB.

29. (New) A steel for a high-strength race according to claim 28, the Fe based steel further comprising, one or more elements selected from the group consisting of the following elements in percentage by weight: Bi: 0.05% or less, S: 0.10% or less, Ca: 0.01% or less, Zr: 0.10% or less, Sb: 0.10% or less and Pb: 0.01% or less.

30. (New) A steel for a high-strength race according to claim 1, wherein the steel is capable of being hardened to 58 HRC.

31. (New) A steel for a high-strength race according to claim 28, wherein the steel is capable of being hardened to 58 HRC.